12-4-2009

Ex. 280-US-425

Unknown

"Rite in the Rain®"
ALL-WEATHER WRITING PAPER

LEVEL

All-Weather Notebook
No. 311

Sprague SP-2
Wide Riffle + Cascade
6-20-06 (High Flow)

4 5/8" x 7" - 48 Numbered Pages

1600.07

2

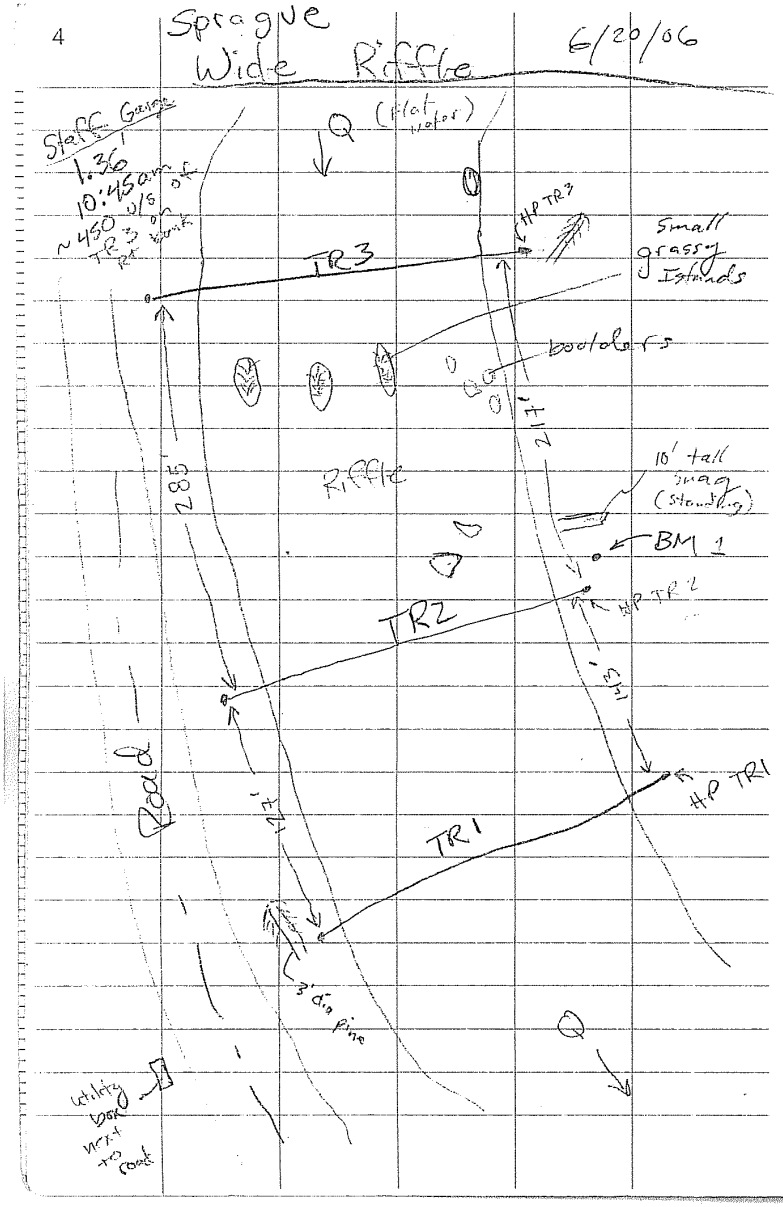
Photo Log

#	
1	D/s from above TR3 Riffle ✓
2	TR3 R-L ✓

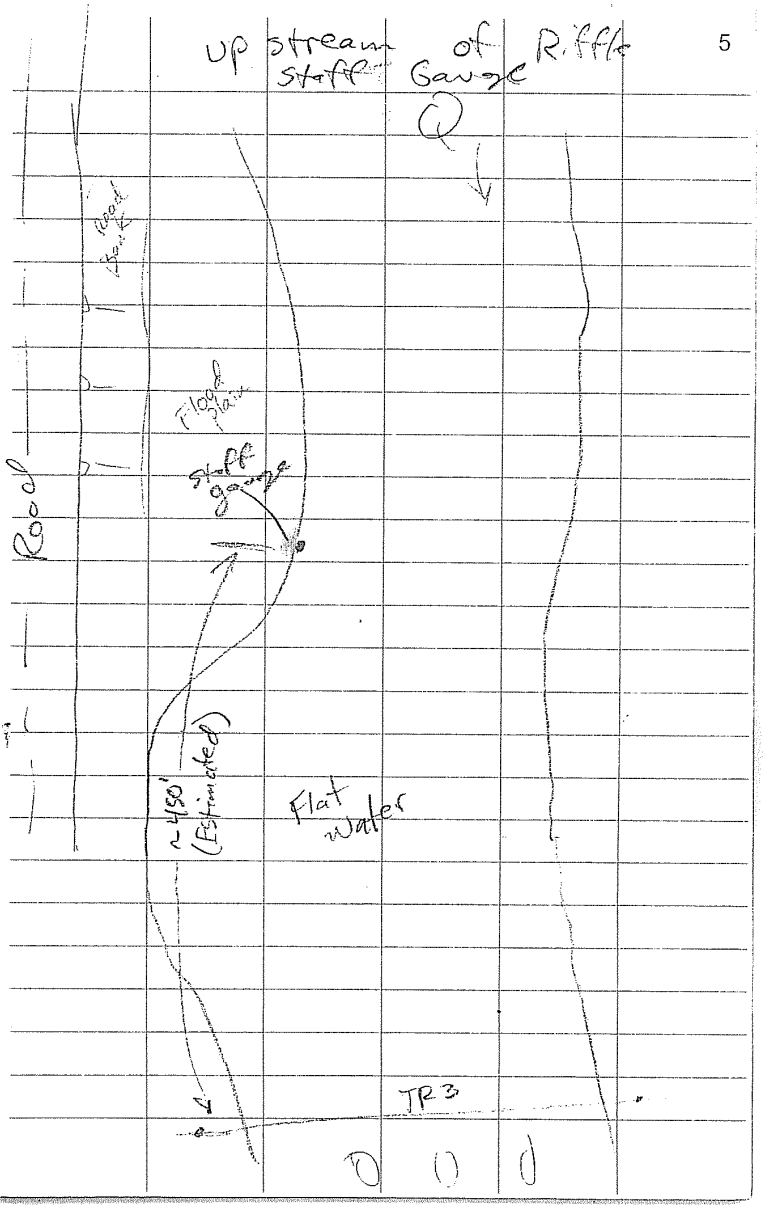
3

Riffle SG Reading	
10:45 am	1.36'
2 pm	1.36'

Sprague Wide Riffle 6/20/06



Up stream of Riffle



6/20/06 Level Loop Riffle

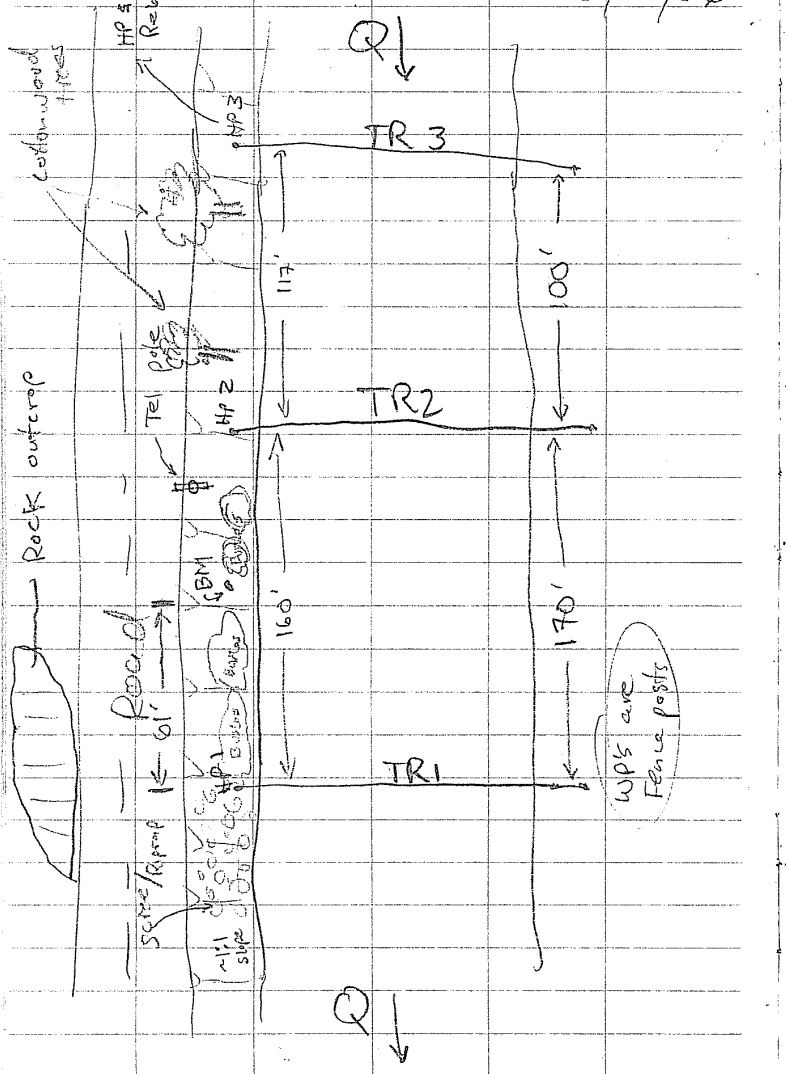
STA	BS	HI	FS	ELEV	Depth
BM	4.10	104.10		100.00	
TR3-HP			2.86	101.24	
TR2-HP			4.18	99.92	
TR1-HP	4.02	104.32	3.80	100.30	
BM			4.32	100.00	✓
TR2-HP			4.40	99.92	✓
TR3-HP			3.09	101.23	✓
TR3 LWSE			8.63	96.41	0.72
~150' U/S TR3 L-side			8.59	96.79	1.06
TR2 LWSE			9.81	94.94	0.43
TR1 LWSE			10.35	94.33	0.36
~100' D/S TR1 L-side			10.83	94.18	0.69
~150' U/S TR3 R-side			9.47	96.77	1.92
TR3 RWSE			9.63	96.48	1.79
TR2 RWSE			11.07	94.89	1.64
TR1 RWSE			11.62	94.30	1.60
~100' D/S TR1-R-side			12.12	94.19	1.99

STA ~~Discharge (Riffle TR3)~~ D V (other Bank)

→ Just U/s of gradient break - flat water U/s riffle D/s

10

Sprague Sp-2 Cascade 6/20/06



11

Sprague High

Level - Loop Cascade 6/20/06

STA	BS	HI	FS	ELEV	Depth
BM	2.93	102.93		100.00	
HP 1			3.81	99.12	
HP 2			1.53	101.40	
HP 3	2.31	102.90	2.34	100.59	
HP 2			1.50	101.40	✓
BM			2.91	99.99	✓
HP 1			3.79	99.11	✓
TR1 RWSE			8.63	94.95 7.95	0.68
~100' D/S TR1 R-side			9.59	93.59 9.31	0.28
TR2 RWSE			6.19	97.25 5.65	0.54
TR 3 RWSE			4.83	98.38 4.52	0.31
TR 3 LWSE			4.63		
TR 2 LWSE			5.48		
~100' U/S TR 3 R-side			4.62	99.21	0.93
TR 1 LWSE			7.93		

102.90 − 7.95 = 94.95
102.90 − 9.31 = 93.59
102.90 − 5.65 = 97.25
102.90 − 4.52 = 98.38
102.90 − 4.62 = 98.28

12 Sp 2 Riffle 7/26/06

STA	BS	HI	FS	ELEV	
BM 1	3.50	103.50		100.00	
HP 2			3.56	99.94	
HP 1			3.19	100.31	
HP 3	2.20	103.45	2.25	101.25	✓
HP 2			3.51	99.94	✓
HP 1			3.11	100.34 (+.03)	not closed
BM			3.44	100.01	DO loop over

STA	BS	HI	FS	ELEV	
BM	3.43	103.43		100.00	
HP 2			3.51	99.92	
HP 1			3.11	100.32	
HP 3	2.29	103.52	2.20	101.23	
HP 2			3.60	99.92	
HP 1			3.20	100.32	
BM			3.52	100.00	Depth
LWSE (~100' D/S TR2)			10.94	93.56	0.98
TR3 LWSE (24')			8.46	95.95	0.89
LWSE (~100' U/S TR3)			7.83	96.19	0.50
TR2 LWSE (19')			9.79	94.28	0.55
TR2 RWSE (145')			9.70	94.37	0.55
TR3 RWSE			9.07	95.90	1.45
RWSE (~100' U/S TR3)			8.81	96.29	1.58

7/26/06 13

	Time	Read
IN	8:45am	0.86
OUT	11:45am	0.86

Riffle WSE Survey cont.

STA	BS	HI	FS	EL	Depth
TR1 LWSE (29')		103.52	10.25	93.76	0.49
TR1 RWSE (149')			10.80	93.76	1.04
RWSE (~100' D/S TR1)			11.28	93.58	1.34

Sp 2 Cascade 7/26/06

Level Loop

STA	BS	HI	FS	ELEV	Depth
BM	2.67	102.67		100.00	
HP 1			3.56	99.11	
HP 2			1.27	101.40	
HP 3	2.03	102.63	2.07	100.60	
HP 2			1.23	101.40	✓
~~HP 1~~	BM		2.64	99.99	✓
~~BM~~	HP1		3.52	99.11	✓

RWSE (~100' D/s TR1)	11.04	92.88	1.29
TR 1 RWSE	8.94	94.27	0.58
TR 2 RWSE (133')	6.50	96.45	0.32
TR 3 RWSE (134')	5.22	97.74	0.33
RWSE (~100' U/s TR3)	4.51	98.81	0.69
LWSE (" " ")	4.40	99.06	0.83
TR 3 LWSE (46')	7.85	97.68	2.90
TR 2 LWSE (43')	6.48	96.70	0.55
TR 1 LWSE	9.51	94.34	1.22
LWSE (~100' D/s TR 1)	10.73	92.73	0.83

102.63
11.04
91.59
+1.29
92.88

102.63
6.50
96.13
.32
96.45

102.63
5.22
97.41
.33
97.74

102.63
4.51
98.12
.69
98.81

170'

102.63
9.51
93.12
1.22
94.34

6.15
4.27
1.88

102.63 11.40 92.23 .83 99.06

102.63 9.90 92.73

2.10/170 = 1.3%

102.63
6.48
96.15
.55
96.70

785 - 290 = 495

102.63 4.95 97.68

SP-2 Riffle 8/30/06 CW

Level Loop & Bank Survey

STA	BS	HI	FS	ELEV	Depth
HP 3	9.56	110.79		101.23	
BM	8.45	108.45	10.79	100.34	
HP 2			8.53	99.92	
HP 1	8.10	108.41	8.14	100.31	
HP 2			8.49	99.92	
BM			8.41	100.00	✓
HP 2	10.85	110.77		99.92	✓
HP 3			9.54	101.23	✓

TR3 Bank Survey

HP 3	8.55	109.78		101.23	
LWP (1.0')			10.43		
-9'			6.54		
-19'			4.92		
5'			11.55		
11'			12.62		
15'			13.54		
17'			13.82		
LWSE (24')			14.73	95.75	0.70
RWSE (190')			15.48	95.72	1.42
200'			12.94		
205'			11.61		
209'			10.52'		
210.2' (RWP)			10.42		

SUBS	Notes
3/2	
"	
"	
3/1	
7/1	
29/1	
1/2	
2/1	
1/2	
1/2	
1/2	

SP-2 Riffle LOW 8/30/06

TR3 Bank Survey (Cont.)

HI 109.78

						Substrate
220'			10.70			1/2
230'			10.36			1/2 ~ 30' to base of road embankment.

TR2 Bank Survey

BM	3.23	103.23		100.00		
RWP (156.5')			6.29			1/2
166'			4.29*			1/2 ~ 40-ft to base of road embank
152'			7.29			1/2 * estimated by Chi-Ming
148'			8.21			1/2
RWSE (145')			9.44	94.19	0.40	
LWSE (119')			9.45	94.09	0.31	
17'			8.98			1/2
12'			8.31			1/2
7'			7.46			1/2
3'			6.60			3/2
1' (LWP)			6.14			1/2
-7			6.15			1/2
-17			5.22			3/7

SP-2 LOW Kiffie 8/30/06

TR 1 Bank Survey

STA	BS	HI	FS	ELEV	Depth	Subst
HP 1	5.75	106.06		100.31		
LWP -1'			9.36	96.70		2/1
-9			7.91			7/2
-19			6.12			2/1
3'			9.31			7/2
7'			10.46			1/2
11'			12.05			1/2
15'			12.14			1/2
19'			12.14			1/2
23'			12.26			1/2
LWSE (129')			12.78	93.57	0.29	
RWSE (149')			12.95	93.52	0.41	
153'			12.10			1/2
157'			11.10			2/1
RWP -160.9'			9.85			2/1
170			7.84			2/1
176			7.37			2/1 ~ 30' to Road embankt

SP-2 Low 8/30/06

Cascade Level loop

STA	BS	HI	FS	E	D
BM	14.94	114.94		100.00	
HP 1			15.83	99.11	
HP 2			13.54	101.40	
HP 3	14.30 ~~14.30~~	114.90 ~~114.90~~	14.34	100.60	
HP 2			13.50	101.40	✓
HP 1			15.79	99.11	✓
BM			14.91	99.99	✓

IR 2 Bank Survey

	BS	HI	FS	E	D	
HP 2	6.29	107.69		101.40		
30'			10.92			1/4
20'			8.85			1/1
15'			8.30			1/2
10'			6.80			1/2
LWP (1')			4.96			1/2
LWSE (43')			12.70	(96.43) ~~94.99~~	1.44	
RWSE (121')			12.99	(96.02)	1.32	
136'			9.74			7/1
139'			10.41			7/1
142.3' (RWP)			8.10			6/1
150'			5.10			3/5

Top Bldr.

SP-2 40W Cascade 8/30/06

TR-3 Bank Survey

STA	BS	HI	FS	E	D
18'		107.69	8.83		
1' LWP			5.61 ~~4.85~~		
21'			8.92		
26'			8.46		
34'			8.14		
LWSE (46')			12.79	(97.46)	2.56

New Setup - continue TR-3 Survey

STA	BS	HI	FS	E	D
HP 3	14.83	115.43		100.60	
156'			13.07		
RWP (145.4')			15.96		
142'			16.25		
139'			17.44		
136'			17.64		
121.5' (RWSE)			19.15	(97.50)	1.22

1/2
2/1
7/1
7/7
7/1 - Top of Bolder
6/1
1/2
1/2
1/2
6/5

~~*estimated by Cutting~~

SP-2 Cascade LOW 8/30/06

TR 1 Bank Survey

STA	BS	HI	FS	E	D	Scabs	Notes
HP 1	15.79	114.90		99.11			
RWP (117.6')			16.93			1/6	
RWSE (111.6')			21.54	94.04	0.68	—	
123'			15.41			4/3	
117			18.73			1/6	
115'			20.38			1/7	
LWSE (39')			21.84	94.07	1.01	~~Boulder/cobble~~	
26'			17.69			Boulder/cobble	
23'			20.19			Boulder/cobble	
21'			18.99			"	
20'			20.75			cobble/boulder veg	
14'			20.34			cobble/veg	
5'			17.08			boulder/veg	
1' (dry WP)			19.48			silt/veg	
-5			16.80			boulder/silt	

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"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

LEVEL

All-Weather Notebook
No. 311

Klamath Basin
2006 Instream Flow
Sprague, Williamson Rivers

4 5/8" x 7" - 48 Numbered Pages

1600.07

6/20/06 Sprague River SP-2
High Flow Data Set
Discharge Measurement TR-3
Meter # 3602 prop 3A cal: 0181

	Station	Depth	Veloc	Sub	Notes
LWP	1.0'	-	-	-	-
LWE	13.4	0.0	0.0	silt/bldr	
	17.0	.0.3	0.0	silt/bldr	/Ag Veg
	18.0	0.7	0.0	Silt/Ag veg	
	20.0	0.90	0.90	bldr/silt	u/s of bldr
	24.0	1.50	0.25	bld./silt	u/s of bldr
	27.0	1.0	0.0	bldr/cob	d/s of bldr
	30.0	1.25	1.91	cob/bldr	
	40.0	1 70	2:60	cob/bldr	
	50.0	1.90	1.44:	cob/bldr	immed u/s bldr
	60.0	1.50	0.44	bldr/cob	d/s of bldr
	70.0	1.80	2.21	cob/bldr	
	79.0	1.70	1.36	Cob/bldr	
	80.0	0.50	2.43	bldr/cob	Top of bldr
	83.0	1.50	2 37	cob/bldr	
	90.0	2.05	0.05	Cob/bldr	d/s of bldr 88'-90'
	91 5	2.10	0.94	bldr/cob	
	93 0	210	1.11	cob/lg gr	
	100.0	2.55	1.50/0.50	cob/lg gr	
	110.0	2.90	1.74/0.64	Cob/lg gr	

	Station	Depth	Velocity	Subst	Note
	120.0	3.10	1.50/1.19	cob/bldr	
	126.0	2 40	1.58	bldr/ cob	
	127.0	0.80	2.23	bldr/cob	
	129.0	3.00	2.31/0.64	cob/bldr	
	130.0	2.60	2.66/1.51	cob/lg gr	
	140.0	2.60	2.20/1.41	cob/lg gr	
	150.0	2.70	2.09/0.44	cob/bldr	bldrs u/s
	160.0	2.70	2.50/1.19	cob/lg gr	
	170.0	2.40	1.30	cob/bldr	
	180.0	2.10	1.23	cob/bldr	
	190.0	1.55	1.84	cob/lg gr	
	194.0	1.60	1.50	cob/bldr	
	197.0	1.85	0.48	lg gr/sm gr	
	198.5	1.65	0.0	Silt/ag veg	
	199.0	0.0	0.0	silt/ag veg	
RWP	210.2'	-	-	-	

Photos SP-2

~~TR-3~~

1 Look d/s, TR 3
2 RB → LB, TR 3
3 LB → RB, TR 3
4 LB → RB, TR-1
5/6 D/S, TR-1

7/8 u/s, TR-1
9 LB → RB, TR 2
10 d/s, TR 2
11 d/s, TR-2
12 u/s, TR-3

13 RB → LB, TR 2
14 u/s of LB, TR 2
15 ~~d/s~~ of LB, TR-2
16 RB → LB TR 1
17 u/s of RB TR 1
18 d/s of RB TR 1

TR-3 Sprague R sp-2 TR-3 07/26/06 Mid Flow TR-3

8:30

STA	Depth	Vel	Dom Sub	Sub % E	Cover	Comments
LWE = 19.9	0.0	0.0			LWE	
~~11~~						
18	0.15	0.05				
20	0.32	0.0				v eg/edge
24	0.92	0.25				80° flow angle
27	0.50	1.03				45° flow angle
30	0.68	0.83				
40	1.25	1.53/0.50				
50	1.35	0.73				
60	1.05	0.37			bld	u/s bld cover
70	1.27	1.96				
79	1.20	0.95				
80	.05	~0.93				
83	0.95	1.20				
90	1.55	~1.05				
91.5	0.45	0.10/0.10				
93	1.52	0.51				
100	1.98	0.82/0.50				
110	2.3	0.74				
120	2.6	1.04/0.18				
126	1.88	0.82				
90.5	1.16	~0.05				~~new~~ cell

use sub. from 06/30/06 survey

swaffer: 3602

Cover: distributed gross flow; bld; veg & algae covered; aquatic creeping; significant change

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SP-2 TR-3 07/25/06

STA	Depth	Wd	Dom Sub	Sub	%E	Cover	Comments
127	0.32	0.69				top bld	
129	2.40	0.72					
130	2.0	1.65					
140	2.0	0.88					
150	2.15	0.78				behind bld	
160	2.12	1.36					
170	1.8	0.76					
180	1.60	.6/1.81					
190	1.0	1.09					
194	1.08	1.29					
197	1.52	0.69					
198.5	1.1	0.05	sm grav	cob.	30	edge	
RWE 198.6	0.0	0.0	veg	silt		cut bank	
92.9	0.72	0.17					
85.0	1.0	1.94	sm grav	bld	40	30° angle	
61.2	+.15					Top bld	

Sub. Dom 6/20/06 use sub sm grav

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Cont.

SP-2 TR-2 07/26/06

LWP= 1.0

STA	Depth	Vel	Sub Dom	Sub Sub	%BR	Cover	Notes
LWE=~~H.T~~	0.0	0.0					
S 18.7	0.0	0.0	bld	silt	50	edge	edge bld
21.0	0.8	1.04	sm grav	bld	30		
24.5	0.8	0.61	cob.	Lg grav	30		
25.5	0.82	0.10	"	"	"		d/s bld
27.0	0.88	0.74	Lg grav	cobb	25		
32.0	1.20	0.69	cob	Lg grav	25		
42.0	1.90	0.60	bld	"	"		
52.5	1.92	0.86	cob	bld	40		
62.0	2.37	3.02/2.26	bld	cob	40		d/s bld
72.0	2.35	2.79	cob	Lg grav			
82.	2.0	2.00	bld	cob			
92	1.55	2.25	"	"	30		
99.8	1.25	1.15	bedrock	Lg grav			edge bld
102.0	1.25	0.10	"	bld			u/s bld / bedrock
105.0	1.08	0.97	"	"			10° flow angle
110.0	1.05	1.58	"	"			edge bld 15° flow angle
115.0	0.35	1.64	bld	bedrock			
124.5	0.85	0.82	"	"			btw bld 30° " "
125	0.10	0.28	"	cob			top bld
130	1.10	1.47					
137	1.0	1.28					

Wide Riffle
* good Q-measurement *

SP-2 TP-2 wide Riffle

STA	Depth	Vel	Dom Sub	Sub	%E
139.5	0.85	1.2	bld	cob	30
140.8	+0.7	—	"	"	
142.0	0.90	0.72	"	"	
145.0	0.5	0.67	"	silt	45
RWE=146.4	0.0	0.0	silt	bld	60
RWP 156.5					

07/25/06 cont.

Cover	Notes
bld	edge bld 15° flow angle
bld/edge	
"	

SP-2 wide Riffle TR-1

07/26/06

	STA	Depth	Vel	Dom Sub.	Sub	% E	Cover	Comments
Lwp	160.9							
	152.6	0.0	0.0	Sd	St			
	150.3	0.10	0.58	Bld	Cob	30		
	149.5	1.00	0.35	Bld	Cob	30		veg
	147.0	0.70	1.07	Cob	Bld	50		veg
	145.0	0.55	1.10	Bld	Cob	40		veg
	144.5	0.30	0.10	Bld	Bld	50		edge bldr
	143.5	0.45	0.0	Bld	Cob	50		bhnd Bldr
	142.3	0.20	1.36	Bldr	Bldr	50		Edge Bldr
	139.0	0.90	1.39	Cob	Bldr	50		
	135.0	1.00	1.51	Bld	Cob	40		
	132.5	1.10	0.10	Bldr	Cob	40		behind bldr
	128.0	1.10	0.85	Bldr	Cob	40		
	120.0	1.40	0.91	Bld	Cob	40		
	114.0	1.95	0.77	Bld	Cob	30		
	109.0	2.20	2.00	Bld	Cob	30		
	105.6	2.20	2.83	Bld	Cob	30		Edge bldr
	103.0	0.05	0.80 est	Bld	Bld	30		
	101.2	2.40	2.97	Bld	Cob	30		
	99.0	2.30	2.70	Bld	Cob	30		
	94.0	1.30	2.43	Bld	Cob	40		
	84.0	2.10	1.53	Bld	Cob	40		
	78.0	1.60	2.61	Bld	Cob	40		

7/26/06 SP-2 Wide Riffle TR-1

	Sta	Depth	Vel	Dom	Sub
	70.0	1.70	1.52	Bldr	Sd
	60.0	1.80	1.47	Bldr	Cob
	66.0	2.20	0.69	Bldr	Cob
	55.0	1.60	1.01	Bldr	Cob
	50.0	1.55	0.05	Bldr	Cob
	45.0	1.05	1.00	Cob	Sand
	40.0	0.70	1.47	Bldr	Cob
	35.0	0.65	0.01	Bldr	Sd
	37.0	0.85	0.56	Lg Gr Bldr	Cob Lgs
	32.0	0.60	1.17	Cob	Lg Gr
	30.0	0.50	0.20	Lg Gr	St
	27.0	0.70	0.05 est	Lg Gr	St
LWE	24.0	0.0	0.0	~~St~~ veg	~~St~~ Veg
LWP	1.0	—	—	—	—

% E	Cover	Comments
50		
50		
40	d/s of Bldr	
40		
40		
50		
40		
100		
40		
40		
60		
60		
100		

SP-2 Cascade TR-3

swoffer: 3602 prop = 3A cal = 101

S.G = 0.1 @ 12:45

07/26/06 A. Waybright, M. Bagner

	STA	Depth	Vel	Substrate Dom	Substrate Sub	%E	Cover	Comments
RWP	175.5							
RWE	136.0	0.0	0.0					
	133.8	0.38	0.15	Cob	St	60	Veg	
	132.0	0.60	1.20	Cob	Lg Gr.	30		
	127.0	0.77	1.30	Bldr	Cob	30		
	124.2	0.90	0.49	bldr	Cob	30		side bldr
	123.5	+0.90	—	bldr	bldr	30		
	122.8	0.80	1.63	bldr	cob	30		45° to TR
	120.0	1.00	3.80	cob	bldr	30		
	117.8	0.80	2.00	cob	bldr	20		d/s of bldr
	116.0	0.70	0.15	cob	bldr	30		d/s of bldr
	114.3	1.00	1.76	bld	cob	30		
	115.0	0.15	2.05	bld	cob	30		
	110.0	1.70	3.51	bld	cob	30		
	105.0	1.10	2.56	bld	cob	30		On bldr
	100.0	1.50	3.82	bld	cob	40		
	95.0	1.70	1.02	bldr	cob	30	l/s V L. VCL (20')	bld u/s
	90.0	2.00	0.31/0.09	bldr	cob	40		
	85.0	2.80	3.44/1.59	bldr	cob	30		
	80.0	3.40	1.85/6.55	bldr	cob	20	l/s " Cover (-30')	bldr 30' u/s
	77.0	3.80	2.64/0.19	bldr	cob	20		
	73.0	2.40	1.14	bldr	cob	20		on bldr?

5-5.5' Visibility

7/26/06 SP-2 Cascade TR-1/2

	Sta	Depth	Vel	Dom	Sub
RWP	119.6'				
RWE	113.9	0	0	Sand	~~Sand~~/Veg.
	112.3	0.8	0.03	Cobble	~~Cobble~~/Sand
	111	1.4	0.13 / 1.11	Cobble	Bldr
	109.5	2.05	0.16 / 1.34	"	"
	108.3	2.35	0.2	"	"
	107	2.60	1.23 / 2.67	"	"
	104	3.00	0.79 / 2.79	Bldr	Cobble
	101	3.25	1.39 / 4.36	"	"
	98	3.05	2.41 / 2.82	"	"
	96	3.0	0.94 / 1.57	"	"
	94	1.5	0.36	"	Bldr
	93	1.05	3.63	"	Bldr
	90.5	1.60	3.63	"	"
	89	2.45	0.17 / 1.09	Bldr	Snd
	85.5	2.45	0.38 / 0.24	"	"
	84.5	2.30	3.64	Bldr	Cobble
	82.5	2.00	3.51	"	"
	81.5	0	0	"	Bldr
	80.4	-.6	-	"	"
	78.7	-2.30	0	"	"
	76.8	2.05	0.10	"	"
	74.5	2.00	0.54	"	Cobble

% E	Cover	Comments
50	[illegible]	
60	Vel	
40		
"		15°
"	Vel	
30		10°
30		
"		
20		
"	Vel	
"	Vel	Top Bldr
"		" "
"		" "
"	Vel	Behind Bldr
"	"	" "
"		
"		Edge Bldr (wet edge Bl.5
"		wet edge
"		top Bldr
"		wet edge
"	vel.	Edge Bldr
"	Vel.	25°

48 | 7/26/06 | Sp-2 Cascade | TR 1

Notes/Angle	Sta	Depth	vel	Dom/Sub	%	Cov
10°	71.3	2.5	1.82 / 1.17	Bldr/cob	20	
10°	69.5	2.8	2.02 / 1.55	"	20	
	65	3.35	3.42 / 2.29	"	10	
	62	3.10	4.01 / 0.92	"	10	
	61	1.85	3.29	cobble/bldr	10	
	58	1.20	1.52	"	30	
	56	1.70	2.18	"	"	
	54	1.27	0.14	Bldr/cobble	40	vel.
	50.2	2.10	0.50	"	"	"
20°	49	1.6	2.33	"	"	
	47	1.55	0.72	"	"	
	43	1.35	0.46	"	"	
	38	1.00	0.05*	"	50	Vel
	34	0.60	0.05*	"	"	"
	31	0.70	0.05*	"	"	
	29	0.8	0.10*	"	"	
LWE	28.4'	0.35	0.05*			
LWP	1.0					

*Estimated

Klamath 2006

PHABSIM

Depth & Velocity

SE-1, SE-2, WM-3 Klamath OSU

1600.07

ALL-WEATHER
Environmental
FIELD BOOK
No. 550

38

Location SP-2 wide Riffle Date 8/30/06

Project / Client TR-3 9 am.

S.G = 0.68 (9 am) Marsh McBirney

S.G = 0.67 (1pm) DOM SUB

STA	DEPTH	VEL	SUBSTRATE		%E
1.0					
18.6	0	0	Veg	Silt	
20	+0.4	—	Veg	Bldr	
24	0.85	-0.01	Bld	Silt	75
27	0.3	0	Bld	Silt	70
30	0.5	~~0.17~~ 0.51	Cob	Bld	50
40	1.75	0.78	Cob	Bld	50
50	1.1	0.34	"	"	30
60	0.9	-0.13	"	"	40
65	+0.5	—	"	"	30
72.5	0.6	0.65	"	"	30
70	1.1	0.87	Cob	Lrg Grv	25
79	1.0	0.36	Cob	Bld	
80	+0.3	—			
83	0.8	0.21	Cob	Lrg Grv	25
90	1.38	-0.47	Bld	Bob	25
88	1.1	1.37	Cob	Bld	25
91.5	0.25	-0.22	Bld	Cob	25
93	0.5	0.05	"	"	"
94	1.5	0.05			
100	1.8	0.04 / 0.92	Cob	Lrg Grv.	
110	1.95	0.91	Sm Grv	Lrg Grv	
120	2.3	0.46	"	"	40

39

Location 180° 90° 0° Date

Project / Client Crew: M. Gagner, C. Yoder

BOT / TOP 0.2 / 0.6

Cover	Comments
	LWP
	LWE
	Out of H_2O
	~~>~~ 185°
Upstream vel break	
	~~>~~ 100°
upstream vel break	
Velocity cover	slight back eddy
	out of H_2O
	new cells ↔ both
Bld cover	
	out of H_2O
Bld Cover	
Bld Cover	
	new cell ↔ out of order
	Back eddy
lots of Aquatic Vegetation	
" "	"
Aquatic Veg Cover	
Boulder Cover	

40

Location SP-2 WR TR-3 (continued) Date

Project / Client Marsh McBirney

STA	DEPTH	VEL	DOM SUBSTRATE	SUB	%E
126	1.9	0.95	Cob	Lrg Grv	25
127	0.20	0.35	Cob	Bld	25
129	2.1	1.05	"	"	"
130	1.8	1.22	"	"	"
140	1.8	0.17	Cob	Bld	30
150	1.9	~~0.23~~ 0.78	Bld	Cob	30
160	1.9	0.82	Cob	Bld	25
170	1.6	0.46	Lrg Grv	Cob	40
180	1.3	1.10	Lrg Grv	Cob	50
190	~~1.8~~ 0.8	0.98	Cob	Lrg Grv	50
194	0.8	1.13	Sm Grv	Cob	40
197	1.3	0.51	Sm Grv	Cob	40
198.5	0.9	.0	"	"	50
198.6	0	0			

41

Location Date

Project / Client

Cover	Comments
	Top of Boulder
None	
upstream vel cover	
Boulder cover	
	undercut bank ~0.7

42

Location SP-2 wide Riffle Date 8/30/06

Project / Client TR-2 10:20am

Marsh McBirney

STA	DEPTH	VEL	Bom SUBSTRATE	Sub SUBSTRATE	%E
156.5					
146.2	0	0	Silt	Cob	40
145	~~0.5~~	0.19	Bld	Silt	50
142	0.8	0.28	Bld	Cob	40
140.8	+0.85	—			
139.5	0.45	0.70	Bld	Cob	40
137	0.55	0.45	Med Grv	Cob	30
130	0.8	0.56	Cob	Bld	40
125	+0.05	—	Cob	Bld	30
124.5	0.7	0.01	"	"	"
123	0.55	0.44	"	"	40
115	0.25	0.55	Bld	Cob	30
110	0.90	1.27	Cob	Bld	40
105	1.0	0.75	Bld	Cob	30
102	1.0	0.05	"	"	50
99.8	1.10	0.76	Cob	Bld	30
92	1.2	1.77	"	"	"
82	1.8	1.48	Cob	Bld	30
72	2.3	2.33	Lrg Grv	Cob	25
62	2.1	0.15 / ~~0.25~~	Cob	Lrg Grv	20
52.5	1.75	0.65	Bld	Cob	30
42	1.9	0.47	"	"	40

43

Location 180° 90° 0° Date

Project / Client

CREW: M. Gagner, C. Yoder

Cover	Comments
	RWP
	RWE
	next to boulder
	out of H_2O
120° ~~S~~	edge of boulder
	out of H_2O
130° ~~S~~	new cell
110° ~~S~~	
Boulder Cover	
Boulder Cover	
upstream Boulder	

44

Location SP-2 Wide Riffle Date

Project / Client TR-2

(continued)

STA	DEPTH	VEL	DOM SUBSTRATE	SUB	%E
32	1.1	0.73	Lrg Grv	Bld	40
27	0.7	0.37	Cob	Lrg Grv	40
25.5	0.5	0.17	Cob	Bld	50
24.5	0.55	0.2	"	"	"
21	0.6	0.53	Cob	Silt	40
18.7	0.150	0	Cob	Silt	50
~~18.6~~	~~0~~	~~0~~			

45

Location Date

Project / Client

Cover	Comments
Boulder cover	
Object cover	
	edge

46

Location SP-2 Wide Riffle Date 8/30/06

Project / Client TR-1 11:10am

Marsh McBirney

STA	DEPTH	VEL	DOM SUBSTRATE	SUB	%E
160.9					
151.5	0	0	Veg	Silt	
149.5	0.7	0.19	Bedrock	silt	
147	0.55	0.63	Bld	cob	40
145	0.55	0.55	"	"	"
144.5	0.15	0.05 *EST	"	"	"
143.5	0.25	0.17	"	"	"
142.3	0.05	0.07*	"	"	"
139	0.7	0.88	"	"	30
135	0.9	0.85	Cob	Bld	30
132.5	0.65	0.20	Bld	Cob	30
128	0.9	0.47	Cob	Bld	25
120	1.25	0.41	"	"	"
114	1.8	0.86	Bld	Cob	25
109	2.8	1.51	Cob	Bld	40
105.6	2.15	1.85	Bld	Cob	25
103	+0.2	+			
101.2	2.2	2.55	Bld	Cob	25
99	2.1	2.73	"	"	"
94	1.2	2.11	"	"	"
84	1.6	1.30	Bld	Cob	30
~~80~~ 77	1.4	1.55	Cob	Bld	40
70	1.4	1.25	Bld	Cob	40

47

Location Date

90°

180° 0°

Project / Client

Crew: M. Gagner, C. Yoder

Cover	Comments
	RWP
	RWE
Aq. Veg	
Aq. Veg.	60° ∡
Aq. Veg	
Aq. Veg	edge of boulder
	behind boulder
*EST	edge of boulder
none	
Downstream of Boulder	
Upstream wl cover	
	edge of boulder
	out of H_2O, boulder

48

Location SP-2 WR TR-1 Date

Project / Client (Continued)

STA	DEPTH	VEL	DOM SUBSTRATE	SUB	% E
66	2.0	1.25	Cob	Bld	50
60	1.45	1.62	"	"	40
55	1.35	1.42	"	"	25
50	1.4	0.69	"	"	25
45	1.15	0.90	Bld	Cob	30
40	0.55	0.94	Cob	Bld	35
37	0.6	0.33	Bld	Cob	50
35	0.4	0.15	Cob	Bld	50
32	0.3	0.07	"	"	"
30	0.2	0.18	Lrg Grv	Cob	50
27	0.15	0	Silt	Cob	50
25.9	0	0	Silt	Cob	50
1.0					

49

Location Date

Project / Cover

Cover	Comments
Boulder cover	
	LWD
	LWP

50

Location SP-2 Cascade Date 8/30/06

Project / Client TR-3 1 pm

Marsh McBirney

STA	DEPTH	VEL	SUBSTRATE Dom	SUB	%E
145.5					
135.0	0	0			
133.8	0.05	0	Cob	Silt	35
132	0.4	0.05*	Cob	Lrg Grv.	30
127	0.5	0.79	Cob	Bld	35
124.2	0.6	0.35	Bld	Cob	35
123.5	+0.9	—			
122.8	0.7	0.45	Bld	Cob	35
120	0.8	3.00	Bld	Cob	25
117	0.5	2.15	"	"	"
116.0	0.5	0.91	Bld	Cob	30
115	+0.05	—			
114.3	0.8	1.24	Bld	Cob	30
110	1.5	2.68	"	"	"
105	0.9	1.30	"	"	"
100.0	1.3	3.37	"	"	"
95	1.0	1.71	"	"	"
90	1.9	0.4	Bld	Bedrock	25
85	2.6	1.2 / 2.2	"	"	20
80	3.2	0.15 / 3.3	"	"	25
77	3.4	0.4 / 2.05	"	"	"
73	2.2	1.05	"	"	"
75	3.5	0.7 / 2.26	"	"	"

51

Location 180° 90° 0° Date

Project / Client BOT / TOP

CREW: M. Gagner, C. Yoder

Cover	Comments
	RWP
	RWE
	* Estimated
	edge of boulder
	out of H_2O
	125° S
Object Cover	
	out of H_2O
	On boulder

Location SP-2 Cascade TR-3 Date

Project / Client (Continued)

STA	DEPTH	VEL	DOM SUBSTRATE	SUB SUBSTRATE	% E
70	3.4	0.80 5.95	Bld	Bedrock	25
67	(2.75 3.0)	1.53 3.72	"	"	"
65		0.38 1.43	"	"	"
60	3.3	0.90 1.01	"	"	"
55	3.33	0.48 0.01	"	"	"
50	2.8	0.0 0.18	"	"	
45	2.4	0.11	Bedrock	Sm. Gvl	
42.5	1.5	0.31	Bld	Veg	
39.5	0.7	0.11	Bedrock	Silt	
35	0.35	0			
35.5	0.15	0	Veg	Silt	
33.5	+3.0	—			
30.7	+1.7	—			
30	0.5	0	Bedrock	Silt	Ac
28	0.4	0	"	"	
26.8	0	0			
1.0					

Location Date

Project / Client

Cover	Comments
Boulder	
Velocity Shelter	
Aq. Veg	
	edge of boulder
	out of H_2O
Aq. Veg	
Aq. Veg	
	LWE
	LWP

54

Location SP-2 Cascade TR-2 Date 8/30/06 2:20pm

Project / Client Mash McBirney

STA	DEPTH	VEL	DOM SUBSTRATE	SUB	%E
7.0					
31	0	0			
33	0.7	0.20	Bld	Silt	50
36	0.6	0.41	"	"	"
37	1.1	0.61	"	"	"
40	1.4	1.67	Bedrock	Bld	
43	0.9	0.25	Bld	Bedrock	
46	1.3	0.07	"	"	
50	1.5	0.87	"	"	
51	1.6	1.36	"	"	
55	1.6	0.73	Bedrock	Bld	
60	1.65	0.53	"	"	
63	~~0.5~~ D	1.35	Bld	Bedrock	
64.5	0.2	2.47	"	"	
67	~~2.0~~ 1.0	2.45	"	"	
69.3	~~0.9~~ 1.3	2.85	"	"	
69.5	+1.2	—	"	"	
70.5	+1.3	—	"	"	
73.3	+0.35	—	"	"	
73.4	1.7	0.91	Bld	Bedrock	
74	1.85	3.65	"	"	
76	1.9	~~0.25~~ 2.64	"	"	
80	2.2	~~0.87~~	Bld	Bedrock	

55

Location 90° Date

Project / Client 80° 0°

Crew: C. Yoder, M. Gagner

Cover	Comments
	LWP
	LWE
Veg	
Veg	
"	
none	
Boulder cover	
	∢ 75°
none	∢ 45°
upstream boulder cover	
	out of H_2O
Boulder cover	
	∢ 45°

56

Location SP-2 Cascade TR-2 Date

Project / Client (Continued)

BOT / TOP

STA	DEPTH	VEL	DOM SUBSTRATE	SUB	%
85.5	2.3	1.72	Bld	Bedrock	
90	2.2	0.19 / 1.20	"	"	
95	~~2.2 1.8~~	0.20 / 3.43	"	"	
100	2.35	2.22	"	"	
103	2.7	1.14 / 2.98	"	"	
105	1.7	2.39	"	"	
107	1.4	3.47	Bld	Bedrock	
109.5	+0.3	—			
111	1.9	~~-0.3~~ 1.2	"	"	
112.5	1.5	2.81	Bld	Bedrock	
114	0.7	2.71	"	"	
116.5	1.1	1.51	"	"	
120	1.3	0.32	Bld	Bedrock	50
122	0.3	0.15	Bld	Bedrock	30
125.5	0.35	0.31	Bld	Cob	40
128	0.60	0.05	"	"	"
131	0	0			
1423					

57

Location Date

Project / Client

Cover	Comments
	(top of Boulder
	65° ✗
Boulder cover	
	180° ✗
	120° ✗
	RWE
	RWP

58

Location SP-2 Cascade TR-1 Date 8/30/06 3:30pm

Project / Client Marsh McBirney

STA	DEPTH	VEL	SUBSTRATE Dom	SUB	%E
113.3	0	0	Bld	Veg	
112.3	0.6	0.11	Bld	Cob	50
111	1.1	0.05 / 0.25	Bld	Cob	
109.5	1.6	-0.05 / 0.35	Bld	Cob	40
108.3	2.2	0.30	1.59	"	"
107	2.2	1.59	Bld	Bedrock	25
104	2.8	1.14 / 2.25	"	"	"
101	2.9	2.48 / 3.07			
98	2.46	2.86	"	"	"
96	2.8	0.87 / 1.46			
94	1.3	0.47			
93	0.8	3.25	"	"	"
90.5	1.5	3.10			
89	2.1	-0.20			
85.5	2.0	0.45			
84.5	2.0	3.59	Bld	Bedrock	
82.5	1.9	3.02	"	"	
81.5	+0.3	—			
80.4	+1.0	—			
78.7	+0.2	—			
76.8	2.0	0.33	Bedrock	Bld	
74.5	2.0	0.24	"	"	

59

Location BOT/TOP Date

Project / Client

Crew: M. Grogger, C. Yoder

Cover	Comments
	RWE (RWP 119.6)
Boulder Cover	
Upstream Vel. broken by lrg. boulder	
Boulder Cover	
Behind lrg. boulder	
Boulder Cover	
	out of H2O
Boulder Cover	

60

Location SR-2 TR-1 Cascade Date

Project / Client (Continued)

STA	DEPTH	VEL	DOM SUBSTRATE	SUB	%∑
71.3	2.25	0.64	Bedrock	Bld	
69.5	2.8	0.62 1.56	"	"	
65	3.0	2.2 2.73	Bld	Cob	30
62	2.5	1.96 2.57	"	"	"
61	2.0	2.63	"	"	"
58	1.1	1.75	Bld	Bedrock	30
56	1.0	2.95	"	"	"
54	1.15	0.11	"	"	"
50.2	1.7	0.13	"	"	"
49	1.35	1.52	"	"	"
47	1.3	1.02			
43	1.2	0.45	Bld	Bedrock	40
38	1.0	0.05*	Bld	Cob	40
34	0.45	0	Bld	Cob	40
31	0.5	0	"	"	"
29	0.65	0	"	"	"
28.7	0	0	Bld	Bedrock	40
1.0					

61

Location Date

Project / Client

Cover	Comments
B Downstream of boulder @ 170° Bolder cover in eddy	
Boulder Cover	back eddy
Boulder Cover " "	
	LWE
	LWP